

# ALPHA PLASTICS

A Complete Facility for Custom Thermo-Forming &  
High-Tech Pressure Forming

Design - Tooling - Production



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# EXPERIENCE

Alpha Plastics has been producing individually designed custom thermoformed parts since 1976.

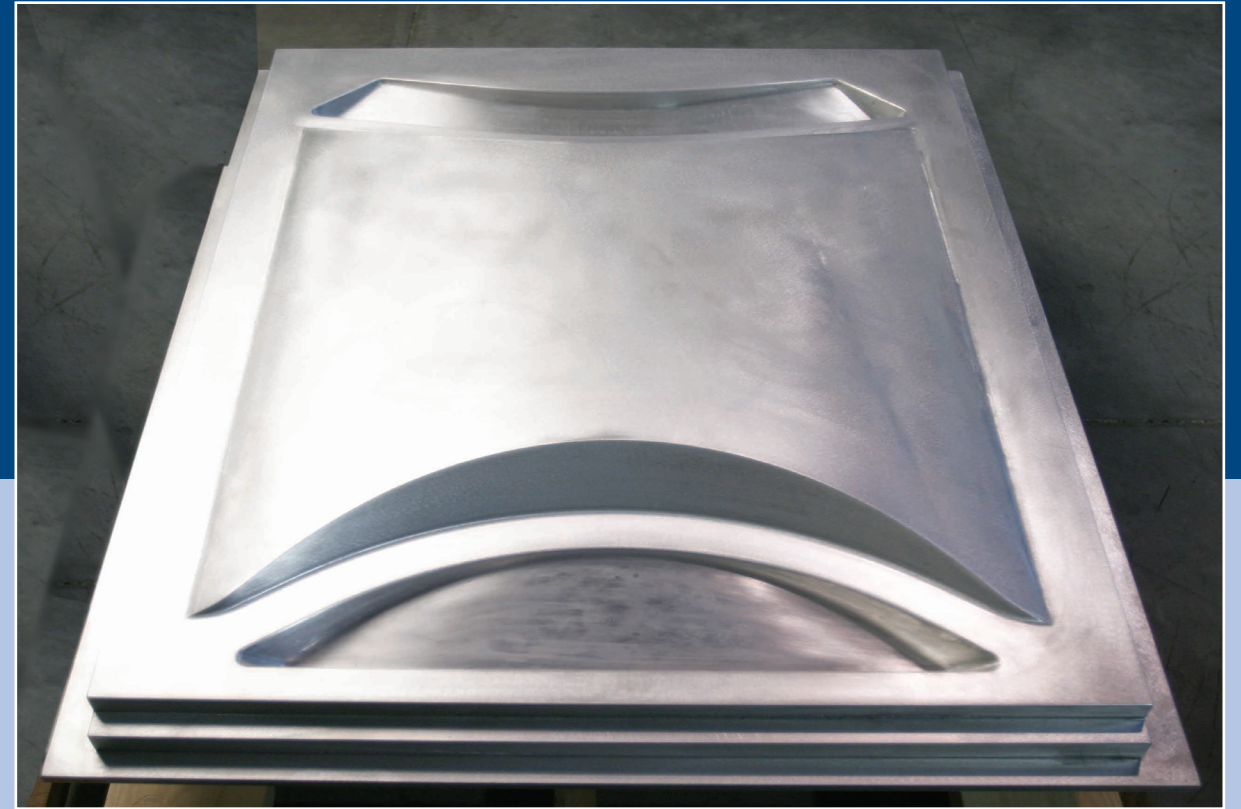
With over 40 years of heavy gauge vacuum and pressure forming you can rely on our experience. Alpha Plastics is a leading custom thermoformer specializing in high tolerance and highly cosmetic plastics parts serving the industrial, medical, and transportation industries.



We are proud to have received our ISO 9001:2015 Certification in June 2020.



# TOOLING



Sophisticated pattern and mold making facilities allow us to precisely maintain the specifications of each part.

Upon completion of your mold, a prototype is submitted for your approval to insure your satisfaction.



# MANUFACTURING



We have the experience and equipment to always provide quality parts. We do molding, trimming, drilling, routing, silk screening, hot stamping, tapping, bonding, and die cutting. We have a new DMS 5-Axis router to go along with four shuttle machines and a new three station rotary for your higher volume needs.

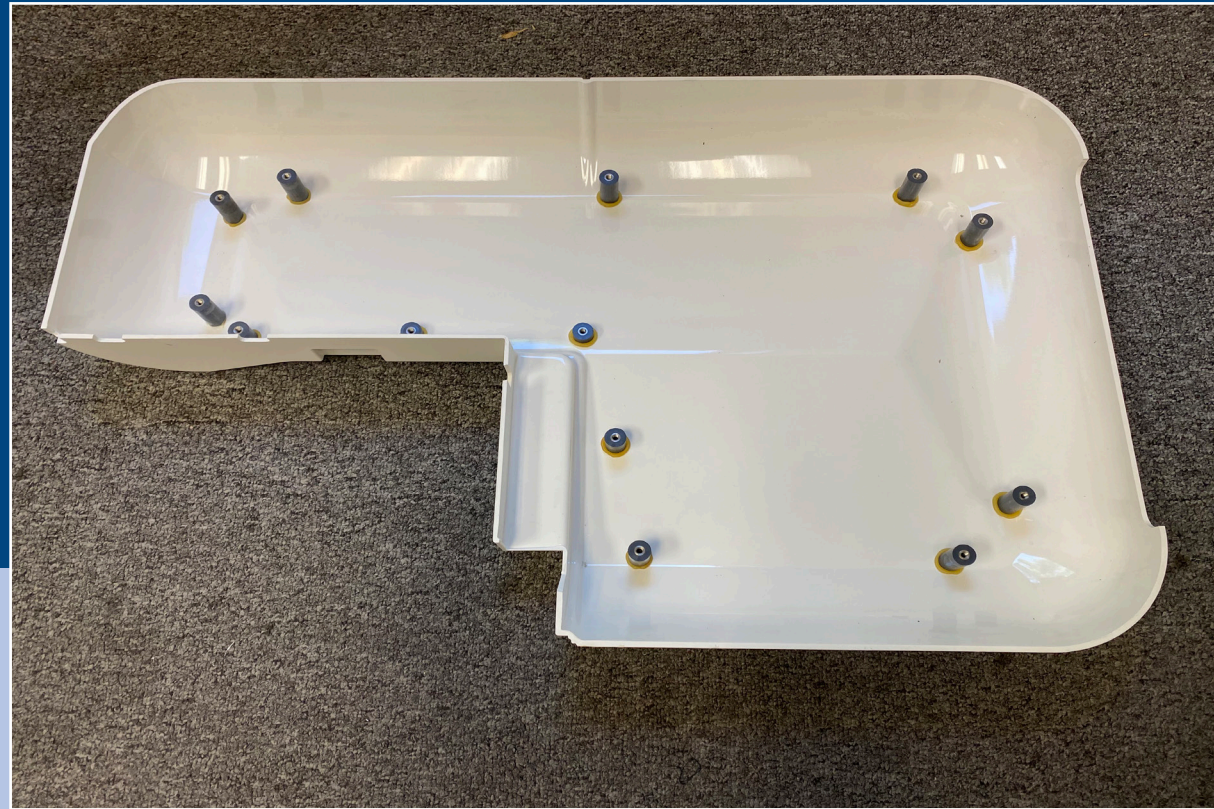




# MATERIALS



Kydex T material



Injection Molded threaded insert rods bonded inside Kydex T part

We partner with the top extruders in the industry to provide you with the correct material.

Typical materials include:

Kydex - ABS - FR-ABS - Styrene - Polyethylenes - Acrylics - PETG  
Polycarbonates

Material thickness from .020 to .400

# DESIGN - ENGINEERING & DEVELOPMENT

Our expert technical staff help you create new or improved designs and evaluate your applications.

Our unequaled performance is the end result of the many years of experience we bring to vacuum forming, pressure forming, and tooling to develop and fabricate prototypes and parts of all types, sizes and styles.

Alpha Plastics has built and maintained a tradition of quality and fair pricing for over 40 years.





# PRESSURE FORMING

We can produce parts with injection molding quality without the high tooling costs, long lead times, or production run requirements of injection molding. Here's a look at what pressure forming can do for you.

Pressure Forming has proven to be a valuable technique for manufacturers of housing for enclosures, covers, exercise equipment, and others. It enables them to get parts to the market quickly with the look of injection molding, without the lead times and high tooling expenses.

Pressure Forming can provide the structural integrity and design flexibility usually only found in injection molded parts.



# ARTICLE EXCERPT

## FROM NEW EQUIPMENT DIGEST

Below is an excerpt of an article written by Ed Sullivan of New Equipment Digest on March 1st, 2016 featuring Alpha Plastics.

### **How to Thermoform Heavy-Gauge Complex Parts, from Material Selection to Custom Tooling**

Enlisting the expertise of a thermoforming supplier can help validate product and tooling specifications and confirm which forming process is best for the project.

**Ed Sullivan**  
**MAR 01, 2016**

In many instances thermoforming of heavy-gauge plastics (thicknesses of 1.5 mm (.060 in.) or greater) is the technology-of-choice for manufacturers and new product designers. Using this process of vacuum forming heated plastic sheets is ideal for many products and components required by aerospace, automotive, medical, manufacturing and countless other industries. A wide variety of heavy-gauge plastic materials are available for this process, many of which can be used for complex parts that demand tight tolerances, intricate geometries and special properties such as fire resistance. Heavy-gauge thermoformed plastics are also a practical solution for many larger parts, such as automotive dashboard sections, refrigerator door shelving and snowmobile body panels.

At the same time, thermoforming prototypes and tooling are often developed more quickly than many conventional molding methods and can be performed through a number of economical processes.  
(CONT. pg 9)





If customers are too self-reliant when they design parts for the heavy-gauge thermoforming process, these same attributes may also be the source of confusion, wheel spinning, and the expenditure of unnecessary costs. What is often needed is a collaborative process that includes thermoforming specialists early in the design of the products that will be formed.

### **Get design support early**

"In my experience, it is highly beneficial for the customer's design engineers to collaborate with their thermoforming vendor early in the process," says Jesse Hahne, design engineer at the Center for Advanced Design (CAD), Elk River, Minn. "The vendor, Alpha Plastics, can help validate the geometry and features of the product design, confirm or assist with material selection, determine how tooling should be developed, provide prototypes quickly and economically, and of course confirm the best process for meeting production volume requirements." CAD is a design firm that focuses on the plastics industry, including design for vacuum forming, rotational molding, injection molding and blow molding.

Hahne, a highly experienced design engineer, consults with many in-house engineers of clients as well as with thermoforming specialists and the molders of different plastic forming technologies. He has a close relationship with Alpha Plastics ([www.alphaplastics.net](http://www.alphaplastics.net)), a design and fabrication specialist located nearby in Minneapolis, Minn. In addition to heavy-gauge thermoforming, the company offers pressure forming and traditional vacuum forming services.

"In our eyes, Alpha Plastics has carved out a niche for complex, hard-to-form, heavy gauge thermoformed products," Hahne explains.

### **Confirm the process**

Jeff Walczak, Alpha Plastic's executive vice president, says that in some cases he receives requests to evaluate the use of thermoforming a product that might best be produced by another process. "I tell them, 'Yes, it's a well-designed part, but pressure forming\* may be more appropriate for producing it,'" Walczak says. "So, it's easy to see why it is vital to get support from a supplier's technical staff early in a project, especially if they are familiar with various forming and molding technologies. This can be very valuable in helping the customer validate that they are considering the right process."

\* or another process



With both thermoforming and pressure forming projects, Walczak assists customers from design to materials selection, tool development, prototyping or 3D modeling and production.

### **Check tooling specifications**

It is often vital that design engineers validate tooling with thermoforming specialists, particularly when the project includes design complexities. These could include such requirements as undercuts, the use of breakaway molds, two-piece products involving manifolds or ductwork, or products that require special trimming or surface finishes. Forming complexities can be problematic for some thermoforming shops. Walczak says they are often achievable, but may require modifications in tooling that could result in cost savings.

“With thermoforming you have much greater flexibility with tooling than you have with technologies such as blow molding or rotational molding,” says CAD’s Hahne. “For example, for smaller projects you can 3D print and test the tool. If a large tool is required, then you build a wood pattern and produce test parts from it, then make changes to the pattern before you finalize the tool design. This technology is so forgiving and flexible it really works well for larger products like snowmobile body panels.”

That tooling flexibility of the thermoforming process enables Alpha Plastics to work with a wide range of sizes, using plastic materials from .010 to .45 in. thick to produce parts as large as 5 x 8 ft, with a maximum draw or depth of 30 in., with draw ratios to select the proper base thickness and forming process.

### **Validate material selection**

While a wide variety of plastic materials are appropriate for thermoforming, it is wise to work with thermoforming specialists to determine the availability of materials, volume requirements, and the ability of materials to meet design requirements. Materials such as ABS and polyethelenes are suitable for many projects, but others require more demanding properties that are available with more advanced materials including TPOs, polycarbonate, and Kydex.





"Any of a number of factors could come into play when you are considering material selection for your products or components," Walczak explains. "Those could include the finish, impact resistance, fire resistance or scratch resistance and many others."

"However, some of these materials may not be practical or even available for low-volume projects," Walczak advises. "In those cases secondary processes may become part of the solution, whether painting or silk-screening or other cosmetic solutions. That's one of the reasons why it's important to consult with an experienced thermoforming vendor about material selection early in the design process."

### **Start-to-finish feedback**

Several years ago Kent Olson, vice president of Packaging Plus, Inc. (Rogers, MN) had a special project for a large medical company that required heavy-gauge thermoforming. The product was a tray composed of R-63, a black, conductive material that is static dissipative that would be used in a clean room.

"The tray is a unique design that my company worked out with Alpha Plastics," Olson explains. "The tolerances needed to be very precise, within thousandths of the medical company's requirements."

Olson says he has required additional sizes of the medical trays over the years, as well as a catch basin project that required a fairly deep draw of approximately 12 inches.

"Working with the thermoforming vendor, Alpha Plastics, involved a highly comprehensive process," Olson says. "At the beginning of the project I sat down with their technicians and went through the specific requirements. They then provide the necessary drawings, and after review, they created a prototype for the customer. After that was approved, we went into production. But it was very significant that the vendor kept me informed all along the way. That was one of the keys to our success."



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